Implementation of CMIP5 Metadata in the ESG Gateway

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Outline

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Overview

- The objective of this work is to provide comprehensive online documentation of CMIP5 simulations in the ESG Gateway
- This involves many groups - ESG, NOAA GFDL, EU METAFOR, PCMDI, Curator, and others
- **Curator's role is to serve as a liaison between METAFOR and ESG and to implement a display of model metadata in the ESG Gateway**

Metadata vs. Datasets

- Metadata:
  - EU METAFOR project is developing web-based model and simulation questionnaire
  - Designated individuals from the modeling centers will fill out the questionnaire
  - The questionnaire will export information in XML format
  - **Curator/ESG will write software to process the XML for intake into the ESG Gateway**
- Datasets:
  - Various modeling centers run CMIP5 simulations
  - Datasets harvested and archived on portals including the ESG Gateway

Metadata determination

- METAFOR sat down with scientists to determine the attributes that should be defined and collected for CMIP5
- **Curator is examining these attributes and fitting them into ESG's existing ontology. Curator is assisting METAFOR with terms, definitions, etc.**

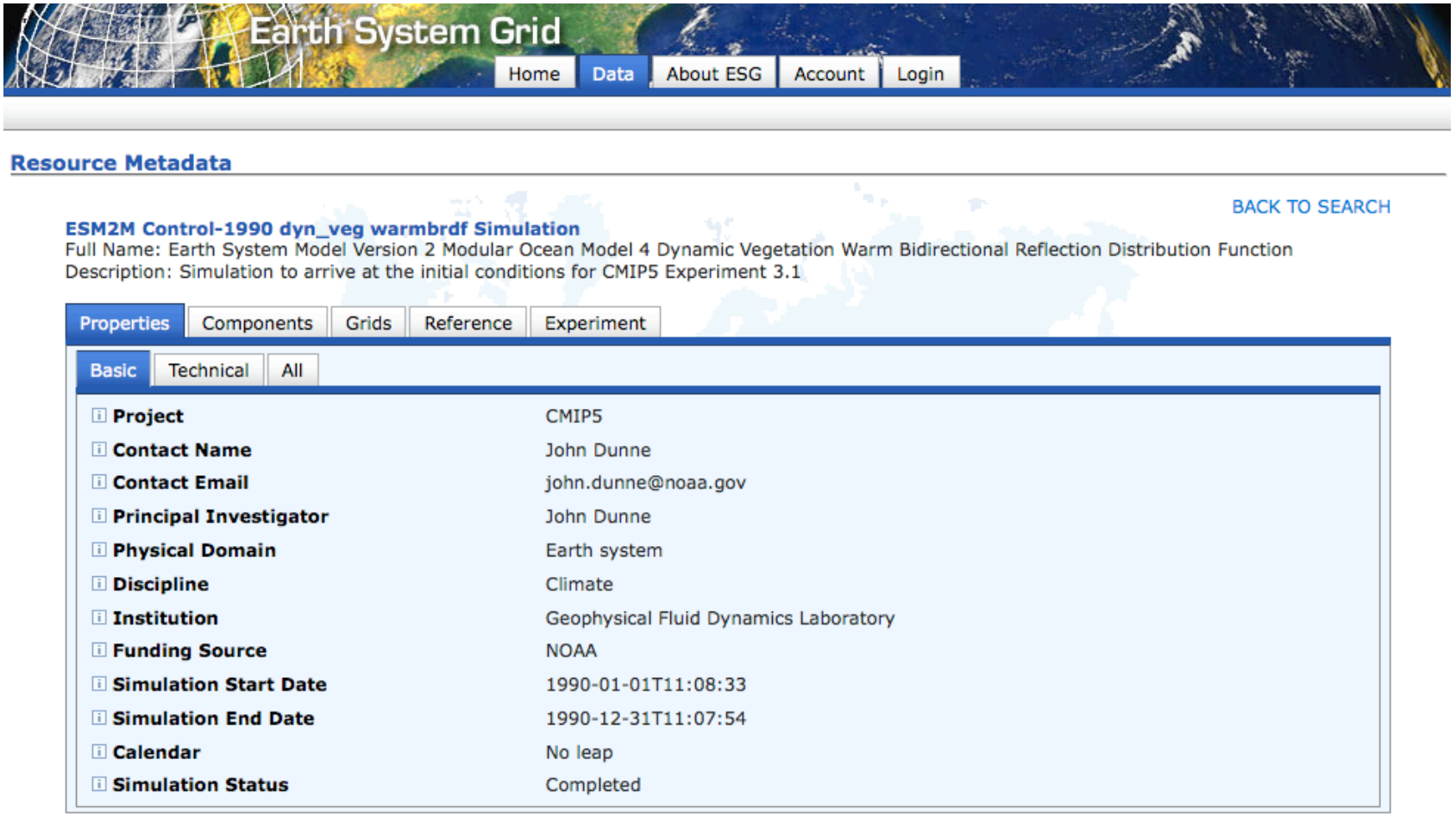
Grids

- GFDL is writing a gridspec program that will generate grid netCDF files
- Modeling centers are expected to run this program for their models and send the netCDF files to PCMDI
- A harvesting program is being written to extract the grid metadata from the attributes of the netCDF files
- This metadata will be ingested into ESG and form the basis of reusable grid references
- **Curator has developed a mechanism to display grid information and allow models, components and simulations to link to it**

Questionnaire to Display

- Sample XML output expected later this fall
- Initial XML input software exists, but will need significant extension
- Developmental duration is dependent upon complexity of the XML file
- Iteration may be required on both sides
- Display is being modified now in anticipation of questionnaire constructs

Display Features: Tabbed Architecture



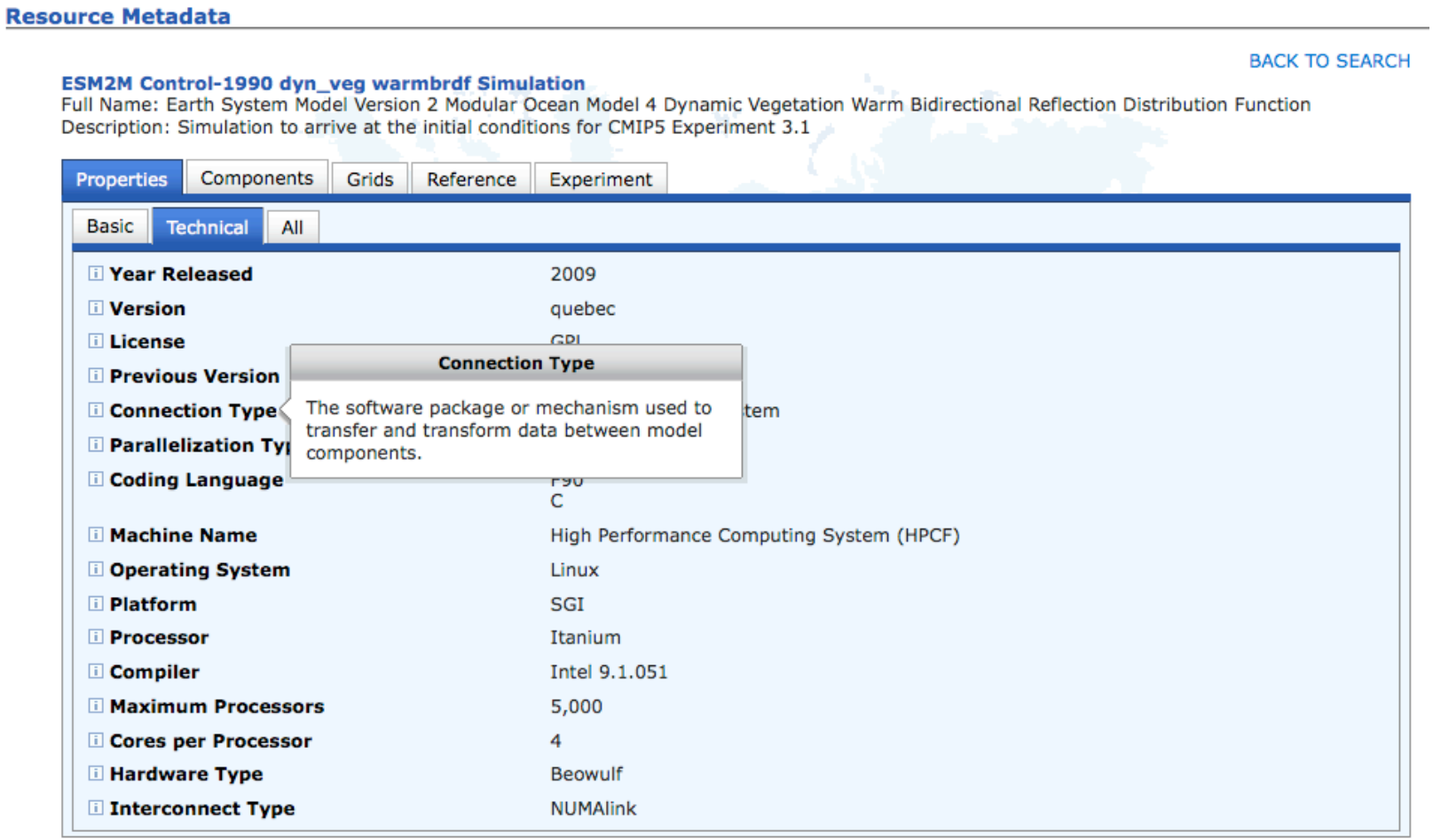
Display Features: Component Trees

ESM2M Control-1990 dyn_veg warmbrdf Simulation
Full Name: Earth System Model Version 2 Modular Ocean Model 4 Dynamic Vegetation Warm Bidirectional Reflection Distribution Function
Description: Simulation to arrive at the initial conditions for CMIP5 Experiment 3.1

Properties | Components | Grids | Reference | Experiment

- ESM2M Control-1990 dyn_veg warmbrdf Simulation
  - Physical Domain: Earth system
  - Version: quebec
  - AM2 Control-1990 dyn_veg warmbrdf Simulation
    - Physical Domain: Atmosphere
    - Version: quebec
    - AM2 FV Dynamical Core Control-1990 dyn_veg warmbrdf Simulation
      - Physical Domain: Atmosphere
      - Version: quebec
    - Atmospheric Chemistry Control-1990 dyn_veg warmbrdf Simulation
      - Physical Domain: Atmosphere
      - Version: quebec
  - LM2 Control-1990 dyn_veg warmbrdf Simulation
  - MOM4 Control-1990 dyn_veg warmbrdf Simulation
  - SIS Control-1990 dyn_veg warmbrdf Simulation
    - Physical Domain: Ice
    - Version: quebec
  - TOPAZ Control-1990 dyn_veg warmbrdf Simulation
    - Physical Domain: Ocean
    - Version: quebec

Display Features: Pop-up Definitions



Future Work

- “Always on” component navigation
- Adapt METAFOR’s scientific properties and definitions
- Modify display to handle boundary conditions, initial conditions, and experimental conformances
- XML upload capability
- Connect the grid display to the grid files
- Refactor display software for clarity and maintenance

Questions?

For more information please email us at curator@ucar.edu

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